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CONTENTS

Education

Using Visual Aids to Instill Communist Ethics	N. KURAKIN	3
A Soviet View of American Higher Education	M. PROKOF'EV	18

City Planning

How Can Our Cities Be Improved?	V. A. KUCHERENKO	29
Regulating the Size of Cities, Buildings and Neighborhoods	N. V. BARANOV	38
City Planning and Public Health	S. V. KURASHOV	41

Art and the Film

Reactions to an Exhibition of English Art	A. CHEGODAEV	44
Critical Comments on Soviet Film Theory and Practice	I. VAISFELD	49

Science and Technology

Some Aspects of Future Plant Design	L. S. FEGL'MAN	57
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PUBLISHER'S ANNOUNCEMENT

The purpose of THE SOVIET REVIEW is to provide the American reader with a cross-section of articles published in Soviet periodicals in the fields of literature and the arts, social analysis and criticism, and science and technology. The editors will select the most penetrating, most representative and most important articles published in the Soviet Union in each major area.

THE SOVIET REVIEW makes these translations available for information and research, and the publication of an article implies neither approval nor disapproval of its contents. The editors cordially invite correspondence from the readers.

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Using Visual Aids to Instill Communist Ethics

By N. Kurakin

This article reveals the kinds of attitudes which Soviet educators seek to foster in schoolchildren through the use of visual aids. It appeared as a supplement to a journal issued by the Ministry of Education of the Russian Federation. ["The Role of Visual Presentation in Education," *Narodnoe Obrazovanie*, 1960, No. 6, Supplement—abridged.]

Science and engineering have evolved new means of learning about our environment, new ways of influencing man's emotions and consciousness. Motion pictures and television have become important media. We learn a great deal from photographs in the newspapers and magazines. All this has a particularly strong effect on children.

Just as all kinds of visual methods are used to make the process of learning easier, visual aids and devices are also needed to help children learn moral standards systematically.

When the teacher has to organize some new group activity, visual aids can be of tremendous assistance. For instance, the activity may be collecting scrap-metal. From the educational point of view it is most important that the children should understand the wider implications of this activity and not collect scrap simply to get their names on the Honor Roll as winners of a contest. They must be told where the scrap they collect goes, what will be made out of it, how every extra ton of metal helps the country to fulfill its economic plan. But it is one thing to tell the children all this and quite another to illustrate the story with vivid images. No matter how many times you tell a younger child that so and so many tons of scrap go to make a locomotive, words can never impress him so much as a visual image that enables him to picture it concretely.

Visual methods can be used in a similar way in teaching children to plant a garden, work on a collective farm in the summer and do many other things as a group.

Visual aids and devices can play a big role in popularizing the good examples set by individual children and groups. A school or class has placed first, for example, in some competition thanks to teamwork and cooperation. Not only is it important that this experience should be described. It should be shown: here is how the school or the class keeps order during the intervals between classes, how it helps a comrade who has fallen ill, how it looks after the younger children, how they organize a skiing outing, etc.

There is the school, for example, in which the children do particularly well in manual training, making things not only for themselves but filling factory orders in their workshop. All this, of course, can be described in words and left at that, but it is unlikely that even the most vivid description will make as much impression as a visual portrayal of the workshop with the children at work, of the school equipment, kindergarten furniture they have made, of the stages in their work (from taking orders to delivering the finished product), of the uses to which the children put the money they earn, etc.

As distinct from what are called agitational devices, in which the picture is accompanied by only a brief slogan, in visual presentation the text explaining and connecting the pictures assumes great importance.

In the process of organizing the diverse activity of schoolchildren we must explain to them what they have to do and how to do it: how to be on duty in the classroom and in the school, how to set about tidying up the classroom, how to conduct a meeting of a Young Pioneer group devoted to some definite topic, and so on. In teaching this it is very important to actually show them what is required. Indeed, the demonstration should be in the foreground here, with explanations merely accompanying the demonstration. Visual devices play a highly important part in this, for they help draw the children's attention to particular elements of the job instead of merely indicating the general procedure. Furthermore, the pictures can be used both at the time the instruction is given and also afterwards, as a reminder.

What we call "advice-pictures" are similar to the instructional pictures. They give boys and girls do-it-yourself pointers for the school and the home, teach them how to behave in public places, at the table, when working and during recreation, show them what kind of gifts to make for their mothers, etc.

Instead of demanding something of his pupils, it is often better if a teacher advises them to do it without "pressure" but in such a way that they themselves become eager to do what he advises. Here, visual aids, pictures which effectively support and bear out the teacher's advice, can be a big help.

Pictures of an explanatory nature can help the teacher in molding ethical views and concepts. Children in the lower age group, and in the medium age group, too, for that matter, assimilate abstract ideas with difficulty; it is much easier for them to grasp an idea if it is linked up with a visually concrete fact or topic.

It is helpful, for instance, to give children an idea of the most common occupations, to show the opportunities for advancement in them, and at the same time to show that there is a good deal of run-of-the-mill hard work even in the most romantic of occupations. This will give the children a more correct idea about various trades. Visual aids of this kind can help describe the most diverse aspects of socialist reality and human relationships in our society.

Experience has shown that visual aids can be used with success by lecturers and speakers before teachers' audiences. We feel it would be extremely useful to televise speeches and talks by scholars on the content and methods of teaching children by utilizing motion pictures and film strips.

Thought must be given to producing visual material for parents. Films and broadcasts dealing with the best schools, presenting the content and forms of educational work with children, should be shown to parents too, but special films and telecasts devoted to correct methods of bringing up children at home and popularizing cooperation between the family and the school are also needed. It would be advisable to produce telecasts or short films based on Makarenko's *Book for Parents*.

We have mentioned only a few of the many ways of using visual presentation in child education, in teacher training, and in popularizing education ideas among parents.

How to Use the "Communist Attitude to Work"
Series of Illustrations

The Work Education Laboratory at the Theory and History of Education Research Institute of the Academy of Pedagogical Sciences of the Russian Federation has made an attempt to work out a system of visual aids for use in promoting work education among children. Plans have also been made and work is proceeding on subjects for motion pictures, posters, film slides and picture books for the schools. The aim is to help schoolchildren to learn work ethics, to teach them a correct attitude toward work, toward people who work, toward the results of their own work and that of their comrades and their group, to teach them how to work correctly and efficiently and to take a conscientious attitude toward their future work.

Teachers' aids are also being developed. Some deal with ways of using visual material; others are visual aids on methods of giving children correct work training. They include illustrations, film lectures, educational films and posters.

This is a first attempt at planning the preparation of visual material to be used in teaching. Time will show how successful it is, but suggestions and criticism from educators who are directly engaged in teaching would help the compilers now.

A model text to show how the "Communist Attitude to Work" series of illustrations might be used will be presented below.

To instill a communist attitude to work means not only teaching the child the corresponding skills and habits but developing in him a correct understanding of the nature of work in a socialist society, a correct attitude to people who work. Only with the proper concepts and through their own experiences will children learn to respect work and the people who work, will they begin to realize the necessity of work, feel a desire to work, learn to and want to work in a group for the common good, learn to work efficiently and learn to take into account the interest of society and the collective in their work.

It is hard to imagine how children can be taught the correct ideas about work and people who work, if their own activity is not accompanied by appropriate explanations.

The explanations may differ in form. They may be a story told by the teacher, class discussion, conferences devoted to works



Poster No. 1
Everything Around You Was Made by the Hands
of Man



Poster No. 2
The Work of Many People Goes into Even the Simplest Thing



Poster No. 3 (on left)

Many People at School, Including Teachers, Young Pioneer Leaders, Charwomen and Your Older Comrades, Help You to Study Well. Your Family Has Made Great Efforts to Have You Grow Up Healthy and Enable You to Attend School

Poster No. 4 (on right)

Help Grown-Ups Wherever You Can



Poster No. 5

Learn to Note Where Your Help Is Needed

of literature, meetings with well-known men of labor, excursions to factories, Young Pioneer gatherings, etc. All these forms influence the emotions of the child as well as his intellect.

It is very important that the ideas about work and workers which the child obtains from talks, in class and during other activities should be reinforced by vivid visual impressions.

The series of posters accompanying this article is an attempt to show children visually the attitude they should take toward work and how they should work.

Visual impressions can be used in different ways in shaping children's ideas about work. One may refer to the children's past experience, ask them to recall certain facts, call their attention to one or another fact during outings, group work activities on days off and as they work together, and show them a picture that will reflect this or that phenomenon. The chief way of instilling ideas and concepts of work is, of course, through the children's own experience. What they observe around them plays a great role, but illustrative material is also important.

For example, the teacher wants to impress upon the children that they should not wait for someone to tell them what to do but should look for useful things to do that are within their capabilities. If he asks the class to give examples of children having performed some task on their own initiative, the boys and girls will be able to cite dozens of them (washing the floor, repairing the fence, taking care of a younger brother or sister, etc.). The idea that they must look for useful things to do will then be backed up by a large number of visual images.

If you begin a discussion with the class by recalling something they saw the day before ("Yesterday you passed the hydrant. It was muddy and people who passed slipped in the mud. A woman fell. . . . Yet you often pass by the hydrant . . .") you may find that the children have concentrated on the details ("a truck drove past," "a little girl was carrying two pails") and missed the main point. This may happen when the teacher calls their attention to it, because the story provides so many varied impressions that it is hard for the child to concentrate on any one of them. In the given educational task, that of teaching the child to display initiative in finding and performing useful jobs, illustrations especially made for the purpose, in which the artist omits secondary details and draws the attention of the viewer to what is most important, can play a big role.

Showing the children Poster No. 5, you can say: "See how inconvenient it is for people to walk here? That little girl even had to take off her shoes and wade across to the other side. Yet no one thinks of laying down a board, even that strong, healthy lad who is leaping from stone to stone. You can see at once he is not very quick-witted. He doesn't even think of helping the little girl across the puddle. But the other boy has guessed what ought to be done. He has brought up a few boards and made a bridge. Now it will be easier for everyone to cross."

"Take another picture, the one with a broken gate. We see it but the first boy doesn't. He passes it, although right at the moment he may be trying to think of a good deed to do. The other boy is brighter. He notices the gate at once and fixes it."

"You should help grown-ups not only when they ask you to. You must learn to see when your help is needed, where your work is needed, and do useful jobs on your own initiative."

After discussing the poster in that fashion the teacher can ask the children to give their own examples ("What initiative do you display at school and at home?") and call their attention to some concrete fact or other ("Look, something is wrong here, and your help is needed").

The foregoing shows how illustrations considerably supplement actual cases drawn from life, rather than detract from them, and make talks on ethics more effective.

The accompanying series of posters reflects the basic concept connected with the communist attitude to work. They may be grouped as follows according to their content:

Posters Nos. 1 to 3 show the work of grown-ups. The purpose of these posters is to give children an idea of the work adults do to make life about us better, fuller, and more convenient.

In Poster No. 1 a boy is on his way to school. He passes a factory, a collective farm field, crosses a bridge, hears the roar of an airplane overhead. All these have been made by man. The picture will help the boy to remember this every time he comes into contact with new examples of man's handiwork.

Poster No. 2 shows that the work of many people goes not only into big structures but that even the simplest things require the work of many different occupations. More than one person, for example, works on the schoolboy's uniform before it is ready to be put on.



АККУРАТНОСТЬ И ТОЧНОСТЬ — ЗАЛОГ ХОРОШЕЙ РАБОТЫ

Poster No. 6

Neatness and Precision Are a Guarantee of Good Work



ОТ ТВОЕГО ТРУДА ЗАВИСИТ ОБЩИЙ УСПЕХ РАБОТЫ

Poster No. 7

The Group's Success Depends on Your Efforts, Too

Human labor not only goes into the things that surround the schoolboy and serve him. Many people, through their work, help him to study well. Poster No. 3 shows the schoolboy's teacher, doctor and older comrades. All of them do a great deal to make his main task, studying, easier. They see that the school is kept clean and pleasant, that order is maintained in the school yard and garden, the newspapers are interesting, and so on.

Children should be reminded that everyone in the family, too, works for them. Their parents have earned money to be able to feed and clothe them, while older sisters and brothers, grandfathers and grandmothers all work for them too.

The first three posters should help to make the child realize that he must appreciate the work done by adults. But for that realization to turn into a conviction and stimulate the child to act, he must be given an idea of how to respect the work of adults.

Respecting the work of adults means not only appreciating what they have made but also helping them in their work. Poster No. 4 shows how schoolchildren can help grown-ups and make their work easier (by washing dishes, bringing in fire wood, helping with repairs, reading aloud to them).

Children should learn to see with their own eyes the ways in which they can help grown-ups. Poster No. 5 shows them some examples.

Besides wanting to work you have to know how to work. How can you work efficiently? Posters Nos. 6 to 8 help to answer this question.

Poster No. 6 makes a point that your clothes and your work place should be neat and tools kept in order. If you keep things in order your work will be exact, and that means the objects you make will be attractive. A slovenly person cannot do good work.

The theme of Poster No. 7 is teamwork. Working with others is gayer and more interesting; in a collective each person can find the occupation nearest to his heart. A collective can accomplish a great deal: its members can build a green-house and plant a garden. Collective work depends on the efforts of the entire group and of each person individually. If you chatter instead of working you cause an interruption in the work and

prevent your comrades from achieving their goal faster. Some members of the group may have harder jobs than others. In that case you should help them if they lag behind. This is the guarantee of successful collective work (Poster No. 8).

The series ends (Poster No. 9) with the challenging question: "How do *you* do your work?"

In content and presentation the series is intended for the first four grades. It can also be used by older schoolchildren, like leaders of Young Pioneer groups. In selecting illustrations to be used at gatherings of their group and deciding how to present them to younger children, Young Pioneer leaders will themselves learn a lot.

The series may be used in working with parents. The posters may be shown at parents' meetings, accompanied by a brief description of the talks given to children about the posters and the tasks the school sets itself in organizing work education. This will stimulate parents to cooperate with the school and lead to coordinated action and demands on the part of teachers and parents.

The posters in this series can be used in different ways. They illustrate a series of talks which the teacher gives the class. (This is what they are primarily intended for.) Combined with excursions to factories and the like, such a series of talks will instill in children the communist attitude to work, foster respect for people who work, and help the children to comprehend the importance to society of their own work.

After the series of talks has been given, a special exhibition of the illustrations can be held.

In those classes in which there is no point in giving such a series of talks because the children already have a definite range of ideas about work gained from previous lessons, talks can be given on particular topics reflected in the posters and the accompanying text. Separate drawings from the series can be hung in the school vestibule, the workshop and the workroom of the primary grades. Some can be used in the wall newspaper.

Here is some advice on methods which we feel will help the teacher make use of the above-mentioned illustrations.

Before starting, the teacher should study all the posters in the series, whether he intends talking about all of them or only a few. Then, in planning how to instill in pupils a system of



BREAK IN

В РАБОТЕ ПОМОГАЙ ТОВАРИШУ

Poster No. 8
Help Your Comrades on
the Job



BREAK IN

А КАК ТРУДЯСЯ ТЫ?

Poster No. 9
How Do You Work?

concepts about the communist attitude to work, he will be able to decide where and how to use the illustrations.

Methods of using an illustration depend on its theme, the presentation of the material in the drawing, the situation in which the illustration will be used (a talk in class, at a Young Pioneer or Octoberite gathering, after an excursion, etc.).

Some of the posters, No. 1 for example, can be used as a foundation on which the teacher builds his story. In showing the children the poster, studying it together with them, asking questions about it and summarizing the answers, he brings out the point that everything around us was made by man. While telling his story or at the end, the teacher asks the children: "And what else is made by the hands of a man?" "What does your father do?" "What does your mother do?" Here the use of the pictures makes the story more graphic. The children are given the factual material they need to develop concepts.

Posters Nos. 4 and 5 may be used as a kind of "program of action" for the children.

For example, Poster No. 4 shows different jobs that children can do. The teacher must get the children to realize, through studying the poster and discussing it, how many different things a child can do with his own hands. The poster should prompt the child, tell him where he can apply his capabilities, what he ought to do to make life pleasanter and easier. The discussion should be so organized as to stimulate the children to help grown-ups and take part in socially useful work. As the discussion proceeds the teacher will ask: "What can we do for our school?" "How can we help our town (village) and make it better?" Questions of that kind should wind up each talk in the series and thereby prepare the children for the final talk: "How do you work?"

On the basis of Poster No. 4 a plan can be drawn up on the part the class will take in the practical work which the school will do over a certain period (school quarter or term). If the discussion is in the primary grades the pictures themselves can be used as points in the plan.

Posters Nos. 5, 6, 7 and 8 can be used to develop the child's social attitude. They show how he should behave, what is good and what is bad. The posters will help to teach the child to pass correct judgments on events in the life around him.

Poster No. 6 is of an instructional nature. It is linked up chiefly with the topic of how to work neatly and efficiently. The teacher will indicate the clothing the boy is wearing and his work place and say: "That's what a work outfit should look like." "A work place should be as tidy as that." The poster can also be hung in the workshop as a constant reminder of the work rules.

Poster No. 8 calls the children's attention to things with which they come into contact every day, things with which they are familiar and the meaning of which therefore often escapes them. For instance, children are often told that their parents and other members of the family take care of them. They are used to the familiar and boring words: "Mother looks after you." "Mother does a great deal for you." The poster will help them comprehend familiar facts in a new way and prompt them to think of how they should repay the care shown them by adults.

The last poster in the series can be used in the final discussion when the children will describe what they do to help at home and at school, how they help grown-ups. This can also be done in written form, in which case the teacher will hold another discussion based on the children's compositions.

We have dwelt here only on methods of using individual posters.

If the teacher decides to use the entire series with the class he should, after determining the meaning and educational effect of each illustration, plan the accompanying explanations so that they correspond both to the content of the posters and the manner in which the material is presented.

If the forms and methods of using the posters are not varied, the explanatory work will have little effect because the children will quickly tire of both posters and discussions.

Below we present various ways of using the posters. The teacher will, of course, find other, perhaps even more interesting organizational forms of working with them.

* * *

We have attempted in this article to indicate ways of solving problems of visual presentation in education, and to show by concrete examples how these posters can be used to instill a communist attitude to work. We hope that readers will give us their opinion of the problems raised in this article.

Poster No.	Content of Poster	Ways of Using Poster
1	Everything around you was made by the hands of man.	a) As illustration in a final discussion and summing up after a sightseeing tour of the town or village. b) To illustrate a talk by the teacher.
2	The work of many people goes into even the simplest thing. Let's see how many people worked to make your school uniform.	As illustration in summing up results of excursion to textile mill or clothing factory.
3	Many people at school, including teachers, Young Pioneer leaders, charwomen and your older comrades, help you to study well. Your family has made great efforts to have you grow up healthy and enable you to attend school.	a) As illustration in summing up the results of a tour of the school or in a talk given by a member of the school staff. b) To illustrate a composition or a report by a pupil. c) To illustrate a talk by the teacher.
4	Help grown-ups wherever you can.	To illustrate class discussion on "What We See in the Picture," to be followed by a composition on "How I Help Grown-Ups at School and at Home," or an independent drawing on that topic.
5	Learn to note where your help is needed.	a) To illustrate a talk about work done by pupils. b) To illustrate a talk on "What Do These Pictures Reveal?"
6	Neatness and precision are a guarantee of good work.	a) To illustrate a talk on "Why the Stool You Made Came Out Crooked." b) For display in the school carpentry shop.
7	The group's success depends on your efforts, too.	To illustrate a discussion in which the whole class takes part.
8	Help your comrades on the job.	a) To illustrate a talk about comradeship. b) As the topic of a composition.
9	How do you work?	a) As the topic of a composition. b) To illustrate a talk about the useful things done by the class.

A Soviet View of American Higher Education

By Mikhail Prokof'ev

Despite abundant criticism of the American educational system in United States publications, Soviet educators are apparently favorably impressed with some of its features. This article in a Soviet higher education journal by the Deputy Minister of Higher and Specialized Secondary Education reports on a visit to American colleges earlier this year. [“Some Problems of Higher Education in the United States,” *Vestnik Vysshei Shkoly*, 1960, No. 5—abridged.]

A group of personnel from higher educational institutions consisting of K. Bilialov, A. Malyshev, N. Mokhov, A. Plygunov, N. Sannikov, V. Smirnov, Y. Jurgen and the author of this article visited the United States in the first half of March 1960. Our two-week sojourn in the USA was a return call to the visit by the presidents of a number of American universities to the USSR in 1958.

Our delegation visited universities and colleges in Washington, Pittsburgh, Cleveland, Boston and New York. We met the heads and faculty members of higher educational establishments, eminent scientists and representatives of the business world. Officials of the Department of Health, Education and Welfare did their best to acquaint us with the problems dealing with the activities of American institutions of higher learning.

As far as the number of students and specialists being trained is concerned, the Soviet and American higher educational institutions are the largest in the world. The successes scored by Soviet higher education and its extensive improvements are evoking a strong reaction at the present time in the higher educational system of the United States.

Many critical remarks are being made today in the USA concerning the organization of higher education. Vice-Admiral H. Rickover, an eminent American public figure, wrote in his book *Education and Freedom* that education in America is in a critical condition and does not meet the demands of the times. There is a shortage of specialists and little attention is paid to the exact sciences at all stages of instruction.

During our trip it seemed to us that it would be very interesting to familiarize ourselves fully with the special features of American higher education, with its strong and weak points.

* * *

The first group of questions which we discussed with American higher education personnel dealt with the prospects of developing higher education in the United States through a qualitative improvement in the training of specialists.

In the 1958-59 school year 1,957 higher educational establishments (universities, institutes and colleges) functioned in the United States. They included, however, 652 so-called junior colleges and technical institutes with a two-year course which cannot really be ranked among higher educational institutions.

According to official statistics the total student body of the universities and colleges of the United States today numbers 3,623,000, but only approximately 2,100,000 of them take a full course, the rest attending only separate courses or series of courses with no intention of finishing college.

The organization of studies, the curriculum, etc. are not uniform in different universities. What they have in common is merely the general study pattern: the main university course is usually four years. The graduate receives the academic title of bachelor of the corresponding science or art. After completing the main course, some of the students remain in their alma mater or shift to another university to continue their studies and defend their dissertation for the master's or doctor's degree in their respective field. The usual period of study for receiving the master's degree is 2 years, and another 2 years for the doctorate. Quite often, however, the graduate student does not manage to prepare his dissertation within this period and studies longer.

The statistics on the number of bachelor's degrees granted show that in 1950, 433,734 were graduated as against 311,298 in 1956. In view of this a number of measures were taken to attract

the youth to schools of higher education. As a result, in 1959 the number of graduates again reached the level of the preceding decade. According to the data of the Department of Health, Education and Welfare they numbered 440,000 people.

The United States is very much worried over the problem of expanding higher education. Quite naturally it is impossible to talk about any scientifically elaborated plan for its development under the conditions prevailing in America. Some universities, like the University of California, for example, are trying to discover some objective indications of the demand for specialists, at least within the limits of their state. The lack of planning in the development of the economy of the United States does not make these attempts very effective. At most they only manage to grasp the general trend in the need for developing one or another branch of education.

We were told at the Department of Health, Education and Welfare that the target is to double the number of students in higher educational institutions within a decade. The heads of the University of Maryland (not far from Washington) plan to double the number of their students by 1970, and to treble it by 1980. Our impression is that all these figures should be considered more as a wish rather than a firmly based national program.

It is unquestionable, however, that there is a tendency for American colleges to increase enrollment. It is quite possible that 576,000 students will receive the B.S. degree in American colleges in 1966, as the United States officially stated in UNESCO.

* * *

What types of universities and colleges will receive priority development? We received the impression that, above all, state universities are earmarked for expansion. The bulk of students will attend them.

As for private universities, evidently they will occupy themselves mainly with the training of masters and doctors of science, as they are now doing. Dr. E. Litchfield, President of Pittsburgh University, expressed the idea that private universities cannot sharply increase enrollment since in that case young people of lesser ability would invariably attend the universities, whereas the special feature of private universities, in his opinion, is to keep studies on a high scientific level. We think that the "threat

of invasion" of a large number of students into the private universities in the United States is non-existent because the tuition fees in those educational establishments are extremely high.

The tendency of American schools of higher education to increase the number of students is to be explained by several factors. On the one hand, modern production requires an ever greater number of specialists having a higher scientific training. On the other, it is caused by the success of Soviet science, the success of Soviet higher educational institutions. A professor in the chemistry department of Pittsburgh University stated in reply to our questions "Can you acquire modern equipment? Do you receive any funds for that?": "Yes, after you launched your sputniks." And then he added: "Launch some kind of a new, wonderful sputnik—and new buildings will be put up for us."

It should be noted that quite a number of students specializing in the fields of commerce and business, law, psychology, social sciences and religion attend many higher educational institutions in the United States. Thus, among the bachelors of science graduating from colleges in 1956 there were specialists in the following fields: social sciences, psychology, business and commerce, the English language, home economics, law and other humanities subjects—137,700 (44.6%); education—70,600 (22.6%); natural and exact sciences—38,900 (12.4%); engineering—26,300 (8.4%); medical sciences—22,400 (7.2%); and finally, agriculture—15,100 (4.8%).

In recent years the number of graduates with the B.S. degree specializing in engineering, as well as the natural and exact sciences, has increased, but not very significantly. The plans envisage the graduation of 56,800 people from higher educational institutions in 1966 with bachelor's degrees in engineering (i.e., about 10% of the total number of graduates).

A considerable place in the curriculum of universities and colleges is held by the study of English, literature, as well as history and other social sciences. These subjects make up from 20 to 25% of the entire curriculum. The students also study physics, mathematics and chemistry. The studies in the first two years of all higher educational institutions are of a general educational character. In the following two years the students have to take up subjects in which they major, but without delving too deeply into special problems. A chemistry student, for instance,

takes courses in inorganic, analytical, organic, physical and colloidal chemistry. By the way, within certain limits the student of an American university has a choice of subjects he can take for credit. He becomes a chemist in general but not a specialist in any given branch of it. This level of knowledge approximately corresponds to that which a student of the chemistry faculty of our university receives after 3½ to 4 years of study.

Thus, as we see it, a bachelor of science is a person receiving sufficient all-round training in a definite field but not one who has delved into it deeply enough to become a specialist. He is, so to speak, a "pre-specialist."

Therefore, strictly speaking, it is not correct to compare, for instance, the number of graduates of our colleges with the number of bachelors of science in American universities. These are not equivalent categories.

At first we thought that such a system of training "unfinished specialists" would arouse objections in industrial circles. We had some talks on this question with leading people in a number of corporations, in particular the Bell Telephone Co., Westinghouse, and Republic Steel Corporation. To our surprise the representatives of the business world asserted that the system of training personnel adopted in the USA fully suits them in principle.

"I prefer to hire a bachelor of science with a broader education, with a sufficient horizon, rather than a specialist who knows a given narrow field of science or production well but lacks sufficiently broad knowledge," we were told by the President of Westinghouse Corporation.

How then are the graduates of the American schools of higher education utilized in production? Large companies actually complete the training of these future specialists. For instance, Westinghouse arranges special courses for bachelors of science which take anywhere up to 18 months. Lectures are delivered on a number of technological, designing and other special subjects, and practical lessons are conducted according to a definite plan. The company's top specialists are involved in giving instruction. The future engineers become acquainted with the "secrets" of the firm.

Evidently such a system fully suits the big monopolies. They have the possibility of selecting from the universities and col-

leges (as we have noted, the companies try to invite graduates not from a few nearby educational establishments but from a larger number of colleges to work for them) the most capable young people, arrange additional studies for them, and acquaint them with the interests of the firm. If the company is less powerful and cannot do this, it will have to be satisfied with what remains. Such is the law of American life. Since this suits the big monopolies, such a system of training personnel will probably continue to exist in the future, too.

The companies also build up their staffs with specialists of higher qualifications from among those who receive the master's or doctor's degree after defending their dissertations.

Some universities offer a so-called cooperative study plan, which calls for a periodic combination of work on the job with studies. It seems likely that such schools cater to companies which lack big financial resources.

The representatives of American industry are concerned over the problem of providing young specialists with a broad general scientific training on the basis of the latest achievements of science and engineering. "We are greatly concerned about the problem of broadening the scientific outlook of the young people and finding ways and means of overcoming the contradictions between the limited possibilities of the human mind and the necessity for constantly increasing the sum of accumulated knowledge," we were told by a representative of the Bell Telephone Co. This stems from the objective requirements of modern production. The universities and colleges try to take these requirements into account. They offer new courses, arrange new practical instruction and laboratory work. There are grounds for thinking that American higher educational institutions will continue to see to it that the student becomes sufficiently acquainted with the latest achievements of science and engineering in taking the main university course.

* * *

The second group of questions that interested us concerned the organization of the training of students in the higher categories (masters or doctors of science).

The category of students in American schools of higher education continuing their studies after receiving the bachelor's

degree is quite considerable and is growing all the time. Here are some statistical data on this group:

Years	Master's Degrees Granted		Doctor's Degrees Granted		Total Master's and Doctor's Degrees Granted	
	Number (Thousands)	In % of Bachelor's Degrees	Number (Thousands)	In % of Bachelor's Degrees	Number (Thousands)	In % of Bachelor's Degrees
1949-50	58.2	13.4	6.6	1.5	64.8	14.9
1955-56	59.4	19.1	8.9	2.8	68.3	21.9
1958-59	no data available				74.8	17.0

The data given in the table also include people receiving professional degrees corresponding to master's and doctor's degrees.

With a certain degree of approximation it can be asserted that in the scope of knowledge and the character of the dissertation work, the American Doctor of Science is equivalent to our Candidate of Science. The Master of Science holds an intermediate position between a graduate of our college and a Candidate of Science.

All the educational establishments in the United States can be divided into two groups in accordance with the ratio of students taking the basic course (for the B.S. degree) to graduate students (after receiving the B.S. degree). The first group consists of universities and colleges (and there are many of them in America) attended only by students taking the basic course or in which they constitute the majority. In the higher educational institutions of the second group graduate students predominate; among these educational institutions are such universities as Harvard, Columbia, California (in Berkeley) and a few other well-known universities. However, their importance in American higher education is considerable. In essence, by their prestige they determine the policy of the development of higher education in America.

It is generally felt that the more capable young people are most frequently chosen, in accordance with the results of their studies, to prepare for a higher academic degree. A student receiving his B.S. in a given university usually shifts to another university to prepare for a higher degree. And it is not obligatory in all cases to present some work for the master's degree. In a number of universities the young specialists are trained directly for a doctorate.

We had an opportunity to become acquainted in detail with the organization of the training of Doctors of Science in the Harvard University Medical School. Dr. G. Berry, the dean of this school, and Dr. M. Kornovsky shared their experiences with us. It is attended annually by 20 people studying for their Ph.D. degree and as many for the M.D.

Great attention is paid to attracting capable candidates to the universities to be trained for the master's and doctor's degrees. The universities strive to have 3 or 4 times as many applicants as there are vacancies. Applications are received from graduates of the most diverse colleges. A group of professors especially chosen by the heads of the schools become acquainted with the candidates.

In enrolling a graduate student, the candidate's successes in his studies, the academic recommendations given him by his professors, as well as the quality of his scientific works, if he has produced such, are all taken into consideration. In certain cases the board may be interested in the erudition of the candidate, which it checks by a discussion with him. The academic recommendation plays a big role here. The professors submitting such recommendations are very careful about them. Mistakes in appraising the capability of a student usually reflect unfavorably on the professor giving the recommendation, and he is no longer trusted. A candidate receiving the recommendation of such a professor cannot count on being accepted.

The usual period of training for a doctorate in science is 4 to 5 years. In most cases the graduate student does not work in the laboratory the first year. He attends lectures, studies in laboratories and seminars, and takes examinations.

People working for the Ph.D. degree take up physics, physical chemistry, biochemistry and bacteriology. In the Rockefeller Medical Research Institute the list of subjects is even broader: physics, physical chemistry, organic chemistry, biochemistry, biophysics, molecular biology, cell biology, and general biology. It is the custom for the heads of individual laboratories to give the students a short course dealing with the current state of affairs in the given field of science. Thus, the students become acquainted with the problems in their scientific area.

After passing the examinations the graduate student appears before a board of professors. By that time the sci-

tific interests of the future Ph.D. should be determined; he must know exactly what problems he would like to tackle, and what aims he is pursuing in the planned research. If the scientific interests of the graduate student have been defined, he is attached to one or another laboratory. If this does not take place, he leaves the university. We were told that it is impossible to imagine a case where a young man, not having any definite scientific interest and depending on the professor to give him a research topic, would be left in a university for post-graduate work.

Deciding upon the theme of his research, the graduate student launches on his experimental work. His advisor may recommend that he study some additional problems. At the end of the second year of studies the student reports to a board of professors on the initial results of his work. If they are promising, he gets another two or three years to finish his research. During this period scientific seminars, at which some particularly urgent problems of the given science are discussed, play an important role in the training of the doctoral candidate. Such seminars are not limited to a definite time period; frequently they last until late at night. Veteran and young scientific workers participate in the seminars, which are usually held in a lively, informal atmosphere. Dr. Berry jokingly told us: "We are all united, the only difference between us is that the veterans have already made a lot of mistakes, while the young ones are yet to make them."

As distinct from the study laboratories of the basic courses, which are equipped in quite a primitive fashion, the scientific laboratories in which graduate students work are well equipped in the better universities. It is indicative, for example, that the identification of matter and the determination of its purity is usually conducted in chemical laboratories by comparing the absorption spectra in the infra-red band. Many of the instruments are automatic. The auxiliary personnel in chemical and many other laboratories has been cut to the bone.

The graduate students do a great deal of work in the laboratories. It is the usual thing for them to do research work in the laboratories at any time (daytime, evening and even at night). At the Rockefeller Institute a staff member can get into the scientific library at any time around the clock.

The student describes the results of his research in the form of a dissertation. It is then considered by a commission of experts, who decide on awarding the doctor's degree.

We received the impression that great attention is paid in American universities to problems of training scientific personnel. They strive to have a young man complete his research for the doctorate at the age of 26 or 27. It is considered normal for a specialist who remains at work at a university to attain a full professorship by the age of 40.

We were very interested in the system of advanced training for Doctors of Science and professors. Quite often, so-called post-doctoral personnel work in the laboratories of eminent scientists in the capacity of collaborators. Usually these are young people who already have their doctorate but wish to check up on their scientific ideas in a qualified research team. Most frequently such work is financed by various funds (for instance, the noted Ford Foundation). Sometimes these are people sent to the given laboratory by some company for the purpose of "catching" ideas, so that they will be up-to-date in the latest achievements of scientific thought and apply them subsequently in the further work of the company.

The system of visiting professors is widespread in the United States. A professor of one university works in another for one year: he delivers lectures and conducts scientific research jointly with the staff of this educational establishment. The universities inviting these professors foot the bills.

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The material and technical base of the various higher schools of the United States is far from uniform. Large universities have numerous scientific laboratories that are often excellently equipped. Extensive scientific research is conducted in university laboratories and various scientific organizations belonging to different firms. There are also special research institutes, such as the Rockefeller, for instance, which are involved in training personnel to one degree or another. In general, it may be said that the close link between science and the training of personnel of higher qualifications is a distinguishing feature of the United States.

Many universities conclude contracts with government agencies or private firms for conducting scientific research, for

which they receive a certain compensation. It must be pointed out that the university's staff workers taking part in the fulfillment of such orders do not receive additional pay for their work. The funds received by the university for this work go to cover its overall expenses.

There are many foreign students attending American schools of higher education. We were told that there are 45,000 of them at the present time. At the same time almost 13,000 Americans are taking courses in various countries. A considerable part of the foreign students in the USA study at their own expense. Considering the fact that a higher education is very expensive in the United States, the conclusion we can draw is that all of them are quite well-off. A small part of the foreign students receive scholarships from various foundations.

It seems worthwhile to take note of the widespread system in the United States whereby students do not take a full course but only study particular subjects. Such students, as I have already mentioned, make up one third of the total student body.

Sometimes such training takes place during the summer at so-called summer courses. In agreement with the Department of Defense, the University of Maryland arranged for the study of some subjects in army units, including those in Europe. After demobilization the soldiers continue their studies in the university, if they have the desire and the money, and they receive credit for the exams they passed.

In the course of our entire tour of the country we were convinced of the deep impression that the head of our government, N. S. Khrushchev, made in America. At Pittsburgh University, for instance, we were told in detail and with great warmth of Khrushchev's visit to the city and the university.

Many scholars in the United States showed a sincere interest in the Soviet Union and the work of our schools of higher education, and expressed their desire to visit the USSR. We attended a jubilee Chekhov evening at Brooklyn College (New York City), which has a student body of 25,000, and saw with pleasure fragments from *Cherry Orchard* and *Uncle Vanya* presented by some of the best American actors.

[All English quotations retranslated from the Russian—editor.]

Problems and Prospects in City Planning

In June of this year an All-Union Conference on Urban Construction was held in Moscow. We reprint here (from *Pravda*, June 8, 1960) portions of three reports delivered at this conference which reveal Soviet attitudes on urban land use, optimum size of cities and public health problems in city planning. The reports appeared under the following titles: V. A. Kucherenko (Chairman of the USSR State Committee on Construction), "The State of Urban Construction in the USSR and Measures for its Improvement"; N. V. Baranov (Chief Secretary, USSR Academy of Construction and Architecture), "On the State and Problems of Urban Planning and the Introduction of Advanced Methods of Community Planning"; S. V. Kurashov (Minister of Public Health), "City Planning and Public Health."

How Can Our Cities Be Improved?

By V. A. Kucherenko

About six years have gone by since the USSR Conference on Construction, which took place here in the Kremlin and at which major problems in the industrialization of construction were solved. In this period a tremendous amount of work has been done in all fields of construction and the building industry.

In 1954 we built a total of 32.5 million square meters of housing. In 1959 the figure was already 80.4 million square meters. In one year we now build almost as much housing as we used to build in the course of 10 years before the war.

The Soviet Union leads the world in the number of apartments built per one thousand of the population. In 1959 we built 14.5 apartments, whereas Britain, France and the USA built 5.4, 7.2 and 7.9 respectively per one thousand of the population. We now build more apartments every year than the USA,

Britain, France, the Federal Republic of Germany, Sweden, Holland, Belgium and Switzerland put together.

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But along with our indubitable successes in urban construction, there are some serious shortcomings.

To develop normally, a city must have definite, economically-substantiated prospects which shape its development and determine its pattern. However, so far there is no single unified plan determining the volume of investments in urban construction. These investments are made out of funds earmarked for the building of housing, public utilities and cultural and other amenities, by economic councils, industrial enterprises, city executive committees and ministries and departments. This results in the disproportionate development of various parts of a city and complicates its construction according to plan.

The decision that the Central Committee of the Party and the Council of Ministers adopted in 1957 on the development of housing construction in the Soviet Union marked a new stage in urban construction. According to a decision of the 21st Party Congress we are to build 15 million apartments in a seven-year period. To get a better notion of what this really means, let me point out that this is roughly the same as building 180 new cities with a population of a quarter of a million each, or about three times as much as all the urban housing of tsarist Russia.

A very important problem in urban construction is that of zoning city territories to make them more convenient to utilize economically.

Some designers, as well as local officials, wrongly maintain that since we have a lot of land there is no reason to be sparing with it. Thus, in Stalinabad zoning has still not been brought abreast of the city's present-day level of development. As a result, we still have 400 hectares under cotton plantations within city limits near the center. But at the same time there are plans to build new housing at a distance of 6 to 8 kilometers away from the heart of the city, on sites with a complex geographical relief and high seismic activity. This will add another 18 to 20% to building costs. The excessive apportionment of territory for industrial establishments also takes a large slice out of urban land. Because land rent is very low factory managers can hold on to these lots for "a rainy day," as it were.

The chief architects of cities and the creators of general plans should not restrict themselves to the mechanical allotment of sites for industrial establishments. They are obliged to participate in preparing the plans for utilizing these sites, seeing to it that the utmost economy of urban land is observed. Land is the most valuable property of the state and therefore each hectare should be used most rationally and effectively.

In this respect the attitude towards private housing construction is a serious issue. Apparently this type of construction will drop considerably in the future. However, present housing requirements do not permit this now. But it is necessary to take radical measures to regulate this type of construction.

It is necessary to shift more resolutely to cooperative forms of building apartment houses. This type of construction will lead to more economical use of large territories and will provide the opportunity for improving amenities.

The conditions existing at present for one-family individual housing construction are more favorable than those for building cooperative apartment houses. This should be revised. Along with this it is already advisable to prohibit the state construction of one- and two-story houses in a considerable number of cities, permitting mainly the construction of four- and five-story housing units in order to economize on urban land, to save on communication facilities and to improve the standard of amenities.

The chaotic and unwarranted construction of individual houses and summer cottages on areas allocated by general plans for the erection of tall buildings by the state is causing great damage to the planned building of towns and at times even considerable losses as well. Up till now it has been extremely difficult to effectively combat unwarranted construction because of the absence of effective legal measures to punish those guilty of it. The Presidiums of the Supreme Soviets of the Moldavian SSR and the Armenian SSR have published decrees on the strict responsibility of citizens and this has already brought about a sharp reduction in unwarranted construction in the towns of these republics. We are of the opinion that this experience should also be taken into account by other Union republics.

In recent years the overwhelming part of housing construction has been carried out on vacant land, in accordance with the directives of the Party and the Government. And this is correct.

However, nobody has relieved us of the necessity of elaborating the most reasonable methods for reconstructing old districts in our cities. These often consist of old houses of little value which were built before the revolution. In a number of cases the existing small houses without amenities are in such a dilapidated condition that economically it may be more profitable at present to demolish them and organize new construction. In doing so it may be possible to use the available network of streets, existing city transport and underground communications, the construction of which is ordinarily rather expensive on undeveloped territories. It should also be added that the areas which are rebuilt will be used more effectively by erecting four- and five-story houses instead of the one- and two-story houses existing at present.

Hence, while continuing to carry out the general line of developing vacant urban territories, we should not make this a fixed canon. Free land should be found within the designed city limits. The selection of territories to be built up should be thoroughly studied so that the most convenient and most economical variant is accepted.

Suburban zones have up till now been considered as something separate from the cities. However, the suburban zone of a city, especially a large city, should be a part of it and constantly used for its requirements. A suburban zone insures the influx of clean air to a city and is widely used for the mass leisure of the population.

Thus, the problem of organizing the work, leisure and cultural and public services for the population can be rationally solved only when a city and its suburban zone constitute an integral whole. At present there is no single master plan for a city and its suburban zone. A system should be set up according to which all types of construction on the territories of suburban zones are regulated by the city executive committees.

The planning designs of a suburban zone should be part of the general plan of a city and a chief architect should also have authority over its suburban zone.

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Better engineering and sanitation of cities is a very important question in improving urban construction. This is of major

concern in our efforts to increase the longevity of the Soviet population.

With the development of cultural and public services for the population, the system of organically connecting the housing with diverse public buildings on the territory of residential districts becomes of great social importance. This is primarily where the features of a town of a communist society will be realized.

The satisfaction of the growing material and cultural requirements of man acquires to an ever greater extent a socialized nature. Under these conditions an apartment means much more than the term implies. It is not only an apartment in the usual sense of the word but includes facilities for children, boarding schools, shops, canteens, clubs—all in sufficient number to meet the requirements of the family and the collective. That is why the job of fully satisfying the requirements of the families and the entire collective of a residential district demands a resolute turn to the construction of complete residential districts with all the elements of cultural and public services.

The existing practice of building houses, children's institutions, shops, laundries, cultural establishments and other public buildings planned by different organizations, and which are not included in a single plan in which the number of housing units is coordinated in necessary proportions with the number of buildings of the primary network of cultural and public services, will have to be changed to achieve this purpose. Otherwise the disproportion between housing and public buildings in the creation of residential districts will increase.

The Party and the Government have put forward a task of tremendous social and economic importance: not only to eliminate the housing shortage but at the same time also to radically improve living standards through the provision of a separate apartment for every family. Until recently, large apartments were built which, due to the housing shortage, were mostly occupied by several families. In order to meet the targets of the Seven-Year Plan three basic problems have to be solved: that of more than doubling the volume of housing construction as compared with the previous seven years, providing every family with a separate apartment, and drastically reducing construction costs.

In 1956, the average cost of an apartment was 55,000 to 60,000 rubles, one square meter of dwelling space costing approximately 1,500 rubles. As a rule two or three families occupied these apartments. But if 15 million apartments are to be built in the course of the Seven-Year Plan period, the cost of each one will have to be reduced to 35,000 rubles. This task is made more difficult because at the same time the apartments will be for separate families, with the cost of one square meter of dwelling space not exceeding 1,150 rubles.

The one family per apartment system has made it possible to provide a new approach to room layout and revise design standards.

Lately a number of changes in standard design have been suggested. Essentially they boil down to increasing auxiliary premises, each room of an apartment opening out into the anteroom, and the installation of elevators and garbage chutes in four- and five-story houses. All these are doubtlessly improvements, but they would result in sizeable increases in construction costs and, consequently, would lead to the reduction of the amount of housing construction. To accept these proposals now would mean reducing the housing construction plan by at least one million apartments, which, with the existing shortage, is impermissible.

The time has come for the City Soviets, which should be in charge of housing and municipal construction, to make a thorough study of the size of families in their areas so as to provide apartments of the necessary size in housing plans. It is a great mistake that we do not build houses for single people and newlyweds, although families of one or two people comprise 30% of the population.

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There seem to be two extremes in the architecture of interiors. Large sums are sometimes spent on decorating the interiors of hotels, sanatoria, theaters and administrative buildings. However our industry, research and designing organizations have given very little attention to the decoration of interiors of dwelling houses, schools, hospitals, children's establishments and other mass cultural and public service buildings.

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It is particularly important to equip, decorate and properly furnish one-family moderate-size flats. The old type of furniture now produced by industry is unsuitable for the new apartments, for it is too big and occupies up to 50% of their space. In some cases this bulky furniture can hardly be carried into the new apartments. Yet the furniture industry is very slow, if not actually unwilling, to start the production of economical sets of furniture for one-family flats. On moving into new flats citizens come up against great difficulties in purchasing new types of furniture, for not enough of it is being produced to satisfy the demands of the population.

In order to fully provide the population with furniture as quickly as possible, it would be advisable to transfer a sizeable share of capacities at enterprises manufacturing standard wooden houses to the manufacture of built-in furniture and kitchen equipment and high-quality joiner items. It would also be advisable to have building organizations install built-in furniture and kitchen equipment while the house is going up, the price of this furniture and equipment to be paid for by tenants when they move into their new apartments.

The standard height of apartments now accepted and the layout of dwellings and public buildings impose new requirements on lighting fixtures. The design, size and appearance of lighting fixtures should correspond to the purpose and size of rooms. However, so far only three factories — the Riga illuminating engineering plant and the electric lighting plants of the Moscow and Leningrad City Soviets — have begun to manufacture, although in very small quantities, electric lighting fixtures for apartments 2.5 meters high. It is necessary to organize the manufacture of plastic and aluminum alloy venetian blinds to be used instead of expensive curtains and drapes in public buildings and dwelling houses.

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The chief architect of a city has a great role to play. He bears the main responsibility for properly planning high-quality urban development work. The chief architect should be the organizer and creative leader of town planning, construction and layout improvement work. However, the present situation in regard to chief architects is disturbing. Only 212 cities out of 875 in the Russian Federation have chief architects of their

own, and a majority of small cities do not have chief architects. Some cities change their chief architect much too often.

All our cities must have highly qualified chief architects. The chief architect should be given definite legal and material rights and made duly responsible for the realization of the city master plan. We should arrange matters in such a way that the best Soviet architects would consider it an honor to have the right to work as the chief architect of a city.

For the successful realization of city development work it is extremely important to properly organize public opinion on matters of urban development in each city.

In this connection, the popularization of a city's master plan assumes great practical significance. Each citizen of a town should be able to envision the future of his urban community, understand the aims and the ultimate results of each city development measure, and be a patriot of his city, district and house. It would be a good thing to set up in all the major cities permanent city development exhibitions. Such exhibitions could display models of cities reflecting the priority and nature of reconstruction work in different districts, so that the townspeople would be able to see in perspective the development and growth of the well-being of their urban community.

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Mass housing construction as well as the construction of public buildings is carried on today by industrial methods and by widely employed standard designs. Some comrades fear this may produce monotony. There is reason to fear this. In standard-design building practices some architects still fail to bring into play all the advantages that industrial methods of building and modern urban architecture present.

The fact that the construction of housing and public buildings has been industrialized should not produce monotonous housing units. The large panels used for the fronts of houses or public buildings should be properly finished; they should be of attractive proportions and should vary in color and surface texture. Consequently, the architect must visit not only the building site but also the factory so as to be able, together with the technologists, to obtain factory goods of fine quality and finish.

Builders and factory executives must bear full responsibility for the quality of the materials and articles they make and the quality of building work done, since with simple, clean architectural form quality is of major importance for the proper effect.

But it is methods of city planning and construction that offer the main opportunity of building beautiful cities and housing units of varied design which would produce a lasting impression even though they are built according to standard designs. The actual pattern of the city and the modern methods used in the planning of residential areas offer much to draw upon in solving esthetic problems. Previously the esthetic features of a city depended mostly on the appearance of a few central thoroughfares and squares and some unique edifices. But today we must make the modern city a system of convenient and beautiful housing and public ensembles, paying particular attention to the diverse features of the local landscape.

The successful construction of entire residential districts depends primarily on the skill of the architect, on how ably he takes advantage of the landscape and the existing greenery, on how effectively and rationally he is able to locate houses and public buildings, on how successfully he is able to tackle the problems of improvement, landscape gardening and architectural ornamentation, and on how able he is to achieve a tasteful color pattern.

It is no exaggeration to say that today, with industrialized building and the increasing amount of prefabricated large panel construction, the designing of entire residential areas on the basis of standard designs occupies the central place in the work of an architect. This is what our best designers should dedicate their talent and creative initiative to achieving.

The problems that confront architects today are so extensive that only by working in groups can architects solve them.

A city's appearance at night is also of no little importance esthetically. When shop-window lighting and display, and the disposition and size of advertisements and their lighting and colors are subordinated to a single artistic concept, with various ways of illuminating public buildings, parks and fountains ably applied, we shall be able to produce an original and impressive effect.

Our efforts to make our cities beautiful must be based on our concern for the convenience of their residents. We must make the solution of problems of economy, engineering, sanitation, and esthetics conform to a single comprehensive pattern, to build cities that will be comfortable and pleasant to live in and will provide the proper conditions for man's physical and mental development.

Regulating the Size of Cities, Buildings and Neighborhoods

By N. V. Baranov

One of the important tasks of Soviet urban planning is to create cities which will combine the advantages of large and small communities and simultaneously do away with the drawbacks of these communities. The key to the solution of this problem can be found in the planned development of residential centers and the rational rehousing of the population.

Big cities have many inherent faults. The presence of many industrial enterprises leads to pollution of the atmosphere and bodies of water. Traffic congestion and dangerous streets are detrimental to both work and rest. Big cities require complex, expensive transport, water supply, sewerage draining, gas, heating, electric lighting, communications, and other services. As a result, urban construction expenditures per resident in big cities are much higher than in small towns. Consequently, one of the main requirements of modern urban planning is the regulation and limitation of the size of cities.

According to the 1959 census, in the last 20 years the number of cities with a population of over 100,000 has increased from 78 to 123, and those with a population of over 500,000, from 11 to 25.

The chief method of solving resettlement problems and limiting the growth of large cities lies through well-planned geographic distribution of industrial, power and transport enterprises and the creation of satellite cities in the countryside, such as Kriukovo near Moscow, Sumgait near Baku and the

Siberian center of the Academy of Sciences near Novosibirsk, all of which are currently under construction.

Life in a modern city is inconceivable without well-organized, convenient transport facilities for the population. It should be borne in mind that as urban traffic increases, travel speeds diminish. The reason for this is that city planning and construction fail to take into account the development of urban transport.

The old type of urban streets with pedestrian traffic and a variety of mechanical traffic should be replaced by new types of arteries designed for pedestrians, local and high-speed traffic.

An important aspect of the traffic problem is parking. It should be noted that many of our city planners overlook this question. An extensive system of parking areas is essential in every city planning project. A rational approach to the use of passenger cars in the interests of the entire population coupled with new approaches in planning and construction will make it possible to prevent many difficulties experienced by cities in America and Europe.

The rapid progress of aviation may soon make it possible to employ multi-seater passenger helicopters.

The development of suburban areas calls for the revision of existing limits on urban transport. It would be expedient to build, in place of commuter railway stations, terminals of a new type with facilities for changing from the underground and other public transport to suburban railways. The extension of subway lines and express bus routes is one of the technically feasible ways of expanding urban transport to serve suburban areas around major cities.

The building of large neighborhoods is generally recognized as being most suitable for the development of industrial methods of construction. Nonetheless, construction is often scattered. Thus, in Gorkiy new buildings are erected in a single line along streets. The local builders have called this method "street facing." But if scattered or linear construction of streets is defective, so is excessive concentration of urgent building projects. Take Tashkent, for example, where 82% of housing construction for the Seven-Year Plan period is concentrated in the Chilanzar District which is a considerable distance from many factories and the heart of the city.

It is customary to provide detailed estimates of the cost of separate buildings, but no estimates are made of expenditures for whole cities. This should be rectified. A scientifically substantiated method for calculating economic indices of urban construction should be drawn up.

Another way of reducing expenditures is the rational exploitation of urban territory.

Stalingrad and Stalino, for example, are bigger in territory than Moscow, while Gorkiy, Kuibyshev and Omsk exceed Lenin-grad. What are the reasons for this? First and foremost is that large tracts of land in cities are used incorrectly or wrongly regarded as unsuitable for construction. In Stalingrad, for example, such areas constitute more than 73% of the city's territory, in Kuibyshev, 61%, in Krivoi Rog, 63%, in Tula, 64%, and in Kemerovo, 71%.

Another example of the misuse of urban land is the construction of low buildings. In view of the tremendous volume of housing and civic construction required, it would be correct to prohibit state-sponsored construction of low buildings in big cities. This would make it possible to considerably reduce the amount of land required, with a corresponding reduction of expenditures on streets, underground services and improvements.

Urban expenditures depend to a great extent on industrial construction programs. The decisions of the 21st CPSU Congress noted the existing tendency towards a departmental approach to the designing and construction of industrial enterprises. When this prevails, independent water mains, sewerage and other such services are provided for every enterprise without cooperation with neighboring projects. Methods of such piecemeal designing and construction have not yet been overcome.

The practice of contemporary urban construction reveals that a modern approach to the structure of the residential area unit calls for new methods of designing and construction. This structure does not fit into the framework of the conventional residential block and can be provided only through the creation of self-contained neighborhoods. With four- or five-story buildings, the optimum size of such a neighborhood is based on a population of six to twelve thousand. Larger neighborhoods would reduce the convenience of public services.

The history of urban construction shows that proper consideration of natural conditions was imperative for the creation

of attractive cities. The wonderful architecture of the Moscow Kremlin, and of old Novgorod and Pskov was created in harmony with the surrounding landscape. Good examples of landscape architecture can be found along the reconstructed river banks in Kiev, Stalingrad and Rostov-on-the-Don.

Planning and construction are sometimes carried out according to primitive patterns, as is the case even in such cities as Sverdlovsk, Gorkiy, Omsk, Kemerovo, Stalinsk, Tula and Kalinin. The reason for this, among others, is that much too often creative landscape architecture is replaced by the mechanical application of standard housing and civic engineering designs.

In many cities small hedged-in blocks are still being designed and erected, leaving no place for cultural establishments or public services. Designers often continue to lay out buildings in straight lines, with utter disregard for sunlight conditions, landscape, and the amount of earth removal involved.

Master plans for urban development are drawn up for periods of 20 to 25 years. However, they should be regarded as provisional, since the buildings will remain standing much longer. The newly created and rebuilt cities will serve not only us but future generations as well. Therefore, it is important to foresee the prospects of urban development and expedite the elaboration of Soviet urban construction theory.

City Planning and Public Health

By S. V. Kurashov

The tremendous growth of the country's industrial and power facilities is posing the problem of keeping the air clean.

The gasification of a number of power and industrial plants and the installation of gas purifiers at many factories, as well as central heating in residential and industrial centers, have already reduced appreciably the extent to which urban air is polluted by dust and gas. This can be noticed in particular in Moscow, Saratov, Gorkiy, Baku, Kashira, Ufa and several other industrial centers. However, industrial and power plants in

many cities are still continuing to contaminate the air. This is especially evident in Dzerzhinsk, Berezniki, Nizhnii Tagil, Stalinsk, Satka, Solikamsk, Stalinogorsk, Kemerovo, Gubakha, Leninogorsk and other cities where only 30 to 40% of the factories have the required purifying installations.

Special mention must be made of the growing air pollution by harmful automobile exhaust gases. We must have the automobile inspection staffs keep a far stricter eye on the technical condition of motor vehicles. Cars with ill-tuned engines must not be permitted on the streets. It is very important that we supply urban traffic with high octane and sulphurless gasoline and prohibit the use of ethylated gasoline. We must have motor vehicles widely employ liquified gas, which gives a far less injurious exhaust. Particular attention must be paid to the designing of new models of automobile engines that would guarantee full fuel combustion.

A very important element in making cities and towns healthier to live in and in improving sanitary conditions is the planting of parks and gardens. They not only clear the air of dust and microorganisms, but also offer protection against winds. This is particularly important in steppelands and the northern areas. They also have a beneficial influence on the city climate and attenuate noise considerably.

We have several wonderful instances of a rational, architecturally-justified disposition of parks, gardens and open spaces. Thus, in Kiev there is now a whole chain of parks along the Dnieper River which is well linked up with the residential centers. The ring of parks in Baku has green avenues leading off to the sea. Much has been done in this field since the war in Moscow, Leningrad, Minsk, Kharkov, Tashkent, Rostov-on-Don and many other cities.

A start has been made in creating suburban green belts as reservoirs of pure air, the lungs, in their own way, of a modern city. They will also provide excellent facilities for sports and recreation. Leningrad's suburban zone now has twelve woodlands parks aggregating an area of 6,000 hectares. Vigorous efforts are being made to restore the war-ravaged parks of Pavlovsk, Pushkin, Petrodvorets, and Gatchina. Back in 1954 the Ukrainian Council of Ministers approved a ten-year plan for the creation of green belts in urban areas, and in the years

since, more than 177,000 hectares have been planted to new parklands. Broad wind-protection belts have been built up around Stalingrad, Rostov-on-Don, Erevan, and many other cities. Work is being done to plant greenery in such cities of the Far North as Norilsk and Vorkuta, as well as in the salt-desert cities of Gur'ev and Krasnovodsk.

Despite the tremendous scope of the work being done, the planting of park lands and gardens is still one of the lagging aspects of urban development. Throughout the Russian Federation the average to one urban resident is not more than 6 square meters, while in Arkhangelsk, Irkutsk and Perm the average is only 1.5 square meters. Public parks and gardens are distributed very unevenly, especially in the bigger cities.

In some places there are unjustified extravagances in the planting of parks and gardens. For instance, costly fountains are built, expensive finishing material used, special heavy path surfaces laid and high iron or stone fences erected. At the same time other parks and gardens are neglected altogether. In many cities the planting costs per hectare amount to 600,000 rubles, while in Leningrad and Moscow they are but a half or third of this sum.

An important drawback is the lack of plans for urban greenery-planting. We must strive to bring the urban per capita parklands average up to 10 to 15 square meters in the immediate future. In the woodlands contiguous to the cities we should create recreation zones where industrial and housing construction would be forbidden. It would be advisable to dispose holiday homes, Young Pioneer summer camps, nurseries, kindergartens and other such institutions here.

Reactions to an Exhibition of English Art

By A. Chegodaev

This review of an English Art Exhibition recently held in Moscow reveals markedly different appraisals of English painters, particularly of "Classical" and "Modern" representatives of English art. ["Greatness and Decline of English Pictorial Art," *Sovetskaiia Kultura*, May 28, 1960—abridged.]

"Greatness and decline . . ." of English pictorial art. We mean no quip in borrowing from Balzac the title for this review of the splendid exposition of British pictorial art at the Pushkin Museum in Moscow. On the contrary. For it gives food for serious thought. True, it arouses conflicting sentiments. On the one hand, profound admiration for the wonderful art of the great English masters, especially Thomas Gainsborough and John Constable; on the other, genuine regret at the sad decline into which modern English painting has fallen, a decline which no verbal artifices can represent as the acme of progress in art.

It goes without saying that the real significance of this exposition lies in the rich and striking impression created by an excellent selection of paintings by artists who lived in the heyday of English art—from Hogarth to Whistler. It is questionable, perhaps, whether the American painter Whistler should have been included in this exhibit. He did live for many years in England, but he remained a stranger to the art world of the Victorian era.

William Hogarth led the way in giving prominence to English art on the world scene. Previously, it had been solely of local significance. It should be mentioned, of course, that it is im-

possible to form an opinion of English art of the 17th and the beginning of the 18th centuries from the works of such secondary portrait-painters as John Wootton and Joseph Highmore, who head the list at the exposition. These naive copiers merely degraded the much finer representative style of the 17th century.

Hogarth had more qualified predecessors. But he deserves full credit for breaking away from threadbare traditions, completely revising the artistic language of English art, and injecting social significance into it. Hogarth's great powers of observation and inexhaustible, biting humor gave no quarter to hallowed customs; his satirical treatment of such subjects is brilliantly represented by the sketch "Masquerade at the Wanstead Assembly," whose many characters are vigorously portrayed in a grotesque manner while at the same time the vitality of the treatment is combined with an extraordinarily delicate color pattern. The refined harmony of the grayish tints and the masterful treatment of the composition puts it among the best of his works, and is closest to his famous "Shrimp Girl."

Hogarth's composition usually suffered from an excess of unnecessary, painstakingly drawn details, which impaired the significance of his paintings; moreover his satire was not always up to the mark, as in the case of the exhibited "Calais Gates," which is rather primitive and chauvinistic. His ridiculing of the Scottish rebels and French soldiers is in bad taste. But one must forgive Hogarth his mistakes and limitations for the expressiveness that he was first to introduce in English art.

Hogarth's tradition was followed by the great English portrait-painters of the 18th century—Joshua Reynolds, Allan Ramsay, Thomas Gainsborough, Henry Raeburn and John Opie, who won for Britain a leading place in world art at the time. It was indeed the flourishing state of portrait painting that gave English art its world significance, just as it did in Russia. One may, therefore, only regret that the organizers of the exhibition failed to display it more widely. The few works, evidently chosen at random, which are being shown in Moscow do not do justice to the delicate sentiments expressed in the intimate portraits of Ramsay, the intellectual qualities of John Opie, the vigorous temperament of Raeburn, or the incomparable, though somewhat superficial mastery of George Romney.

On the other hand, Reynolds and Gainsborough are well represented. One sees Reynolds as he was—versatile, a bold ex-

perimenter, aware of the value of romantic effects, and self-confident (which sometimes led to careless insipidity and even banality); though lacking depth and intensity, he displayed truly admirable artistic qualities at times. He honestly believed himself better than Gainsborough whom he scorned, though actually he was a far cry from that extraordinary magician.

The inadequate representation of 18th-century portraits is in no way compensated for by an abundance of genre paintings. This field did not occupy an important place in 18th-century England. This is true not only of Joseph Wright-of-Derby, whose romantic blacksmith shops and scientific experiments were a real innovation. The lachrymose styles of George Morland and Francis Wheatly, the English imitators of Greuze, leave the spectator indifferent.

The decline of portraiture in England at the beginning of the 19th century was compensated for by a remarkable flowering of landscape painting. In the hands of such a great master as John Constable the landscape became a medium for expressing the strongest and purest of human emotions: it reflected not only the beauty of nature but human souls as well. Looking at the sketches and paintings of this great artist one can really see the lovely English countryside (which still looks exactly as Constable depicted it), and one can sense the pulse of a constantly changing, rich and diverse reality.

Constable invariably treats nature as the setting for man's creative endeavor; he was the first to scrap the traditional petrified patterns of landscape painting of the past; he emphasized the incomparable artistic value of ordinary and inconspicuous nature, which has no claims to ideal beauty. He finds poetry in the dirty colliers on the yellow Brighton beach, in the shady banks of the slow-flowing river Stour, and in the knobby Hampstead Heath, skilfully taking full advantage of different light and air effects, and realistically reproducing the soil.

In Constable's lifetime, his country failed to realize that he was her greatest artist, and lack of understanding and disparagement were all that fell to his lot. The bourgeoisie was alarmed at his democratic mind—it derived more comfort and pleasure from the make-believe world of Joseph Turner.

We cannot really tell whether modern abstract art, especially American tachism, stems from Turner's traditions. One

thing is certain, however: more than a hundred years ago he established the principles of an art divorced from life, transforming reality into an amorphous mirage devoid of all characteristics of place, time, space and form, and introducing instead fearful, mystic specters, as is the case with his "Evening and Morning of the World Deluge" or "The Skeleton Leaning from a Speeding Horse." At the Moscow exposition Turner is poorly represented.

The heyday of English art actually came to an end with the death of Constable in 1837. The Victorian era, a miserable time for English art, stifled the heartfelt aspirations of artists and turned painting into a shallow, naturalistic craft, called on to varnish the ugliness of bourgeois life. This gave birth to the virtuous philistines and detectives of William Frith (in the exhibited painting "Railway Station"), to the story-book, canine allegories of Edwin Landseer, the vulgar symbolism of George Watts, and the artificial, mystic exaltation of the Pre-Raphaelites. Sugary didacticism destroyed vigor and vitality; color was turned into a cacophony of variegated mordant tints which looked like an oil-cloth pattern. Unlike the literature of the times (Dickens and Thackery), Victorian pictorial art was impotent.

In this dark firmament there rose the bright star of the American artist Whistler who, in the years he spent in England, was constantly derided. He had nothing in common with his English contemporaries, as is evident in the works displayed. The canvases shown testify to the great power of his sober, truly realistic art. A fine example of his work is provided by the remarkably characteristic and intellectual portraits of Thomas Carlyle and Miss Cicely Alexander, and by his fine Thames landscape "Nocturne, Blue and Silver—Cremorne Lights."

The extreme trends of formalism in art—the many trends of expressionism, surrealism and abstractionism—became widespread in England after the First World War. They are too generously represented at the Moscow exhibition, and in this respect its organizers were evidently not impartial enough, for they failed to display the works of Britain's fairly large school of modern realist painters (the only exception is a painting by Edward Middleditch, "Pigeons on Trafalgar Square").

Evidently the requirements of objectivity gave way to the strong desire to persuade themselves and others that realism is

"out of date" and that the only proper thing to do in the 20th century is to engage in tiresome and monotonous experimental combinations of abstract daubs and lines. Unfortunately, because of such subjective inclinations, the exposition did not really fulfill its purpose; it was defective and gave the wrong idea that modern English pictorial art was ideologically barren and no longer creative.

The authors of the catalogue have attached vague comments to reproductions of abstract and surrealist paintings reminiscent of those which were heard in the days of Malevitch and Kandinsky. They have not changed at all since. How can this be reconciled with promises of unprecedented progress in the realm of abstract art? It came to a halt long ago and has grown obsolete; its partisans have failed to notice that it has gradually assumed the nature of a decrepit and fruitless academic school, totally unfit to express the profound ideas its champions would like to attribute to it.

The unknown authors of the comments in the catalogue go so far as to rank Constable's realism on the same level with the vulgar and shallow naturalism of the Victorian school; they also employ very delicate and respectful terms to characterize the offensive surrealist productions of Francis Bacon and Graham Sutherland, and the monotonous daubs of the abstractionists. Mary Shamo, a staff member of the London Tate Gallery (which is the chief promoter of abstract and surrealist art in England), frankly states in the foreword to the catalogue that some artists seek to create an ideal order out of the chaos surrounding them; they find it easier to express their emotions by not going into detail. Well, we can only feel sorry for people who are surrounded by chaos. However, they have chosen a rather odd way of getting out of it, fully transferring it to their canvases.

All these factors only strengthen the impression that modern British pictorial art has fallen into decay. Had the selection been different, this impression would not have been so strong nor the criticism so severe. Though the exposition "ends" badly, this does not impair its general value.

We must express our deep gratitude to the British Council and the Exposition Committee (which includes outstanding English scholars) for giving us the opportunity of appreciating the great art treasures of the British people.

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Critical Comments on Soviet Film Theory and Practice

By I. Vaisfeld

What faults do Soviet film critics find in their country's films? What suggestions are they making for their improvement? ["On the Retardation in Cinema Theory," *Sovetskaya Kultura*, June 4, 1960.]

"Cinema theory is not keeping up with the times!" How often we hear this. The effect is soporific: since theory chronically lags behind the times, there isn't much use in looking to it for help. We have a way of trying to justify this lull in theoretical work by referring, say, to the need for collecting the proper material to begin with, and maintaining that esthetic theory must always be not the "foreword" but the "afterword."

To be sure, esthetics advances together with and grows out of artistic practice. We have no patience with ivory tower theoreticians. We prefer the creative, militant, active position of the prober and participant in artistic development.

As we know, the first integrated system of the theoretical ideas about the cinema came from our country. It was in the Soviet Union that the theory that served as the foundation for the progressive cinema all over the world was originally formulated.

The history of Soviet cinema theory has its singular features. It was developed not by scholars alone, but also by the people who were busy making films. When the specialists in theory failed to keep up with the stormy and revolutionary advance of art, the practical workers picked up their pens and became analysts and researchers themselves. Neither was that tendency confined to a few isolated men of genius; it was in-

herent in our whole system of work, which is based on the only truly scientific method, the Marxist-Leninist method, of analyzing reality and art.

In 1928, Eisenstein, Pudovkin and Alexandrov published an article, "Staking a Claim," in which they propounded a body of ideas on the sound film, which had not yet established its artistic right to exist. Many world famous cinematographers regarded sound as the death knell of the cinema as an art. Chaplin refused to do talkies. Before any sound pictures had been released, the American producer William Griffith declared that the very nature of the cinema ruled out the need for a speaking voice, and made it entirely unsuitable. Many film makers in the Soviet Union also failed to get their proper bearings and denied the possibilities of this new technical advance.

What should theory have done in that case? Tag along behind the "practitioners," or at best try to "keep pace with them," as certain critics suggest? Or try to get its bearings independently with regard to this new phenomenon?

Eisenstein, Pudovkin and Alexandrov, who were now speaking as theoreticians, chose the latter course. Contrary to many authorities on the films, they declared:

"The new technical advance is not a passing episode in the history of the cinema; it is the fundamental solution to many seemingly hopeless bottlenecks for which the progressive film avant-garde is waiting." By "bottlenecks" the authors meant the various weak points of the silent films, such as the need for captions and sub-titles, purely informative general shots, and so on. The authors called attention to the wonderful possibilities inherent in combining sound and visual images, though such combinations had not been attempted as yet, and said the international language of the silent films could be preserved nonetheless.

Eisenstein, Pudovkin and Alexandrov could see ahead. Their foresight was based on profound and skillful analysis of the fundamental tendencies that were making themselves apparent in the development of the world cinema. Granted that the modern reader can discover certain flaws and gaps in the article by the three film directors, there having been no experience of sound pictures for them to draw on at the time, it is still true that these

mistakes of immaturity cannot negate the importance of the article as a landmark in cinema history. It is still an example of daring creative thought, of the vitality of our cinema theory and its readiness to join the fight as soon as it started if this would advance Soviet and world cinematography.

The Communist Party has always encouraged the initiative of our film producers, critics and estheticians and their search for better means of expressing our advanced ideas, for new roads in art illuminated by socialist realism. When just reproaches are leveled in the press at our film critics and theoreticians, it is mostly because they are not showing enough activity and adaptability.

The 21st Congress of the Communist Party alerted the social sciences to the need for daring theoretical solutions of the new problems life was posing. Unquestionably this task still lies before the field of the esthetic theory of the cinema. The Central Committee's decision "On the Tasks of Party Propaganda under Modern Conditions" directed theoretical search along the lines of closer ties with life and the creative solution of the new problems that life was bringing to the fore. "Many economists, philosophers, historians and other scientific workers," says the decision, "have not overcome traces of dogmatism and are not showing a daring creative approach to life and the experience of the masses; they are not working out urgent theoretical and practical problems with the necessary energy, and often seem to have shackled themselves with problems that are out of date and have no significance."

The same shortcomings still characterize the state of cinema theory to this day. Yet the need for a body of theory covering the general problems of film art is exceedingly great.

* * *

I should like to remind the reader of certain gaps in our research — problems that we critics and scientists hardly ever concern ourselves with.

As you know, every concrete work of art is more or less related to definite esthetic ideals, irrespective of whether the artist has made a platform declaration of those ideals or unconsciously expresses them. Furthermore, his esthetic ideals are more or less related to his conception of man, the world, society, in other words, his basic ethical outlook. The esthetic

ideals of the art of socialist realism spring from the Marxist-Leninist world outlook and the philosophy of dialectical materialism.

The film industries of the capitalist countries have given us many substantial, important, interesting pictures which express progressive ethical and esthetic ideas. These include *Bicycle Thief* and *We, Infant Prodigies* as well as some of the best Japanese, French and Mexican pictures. At the same time the conditions of capitalist production result in a spate of pictures based on entirely different ideas, pictures expressive of a crass philistine approach to life and art. On the whole those pictures follow one and the same naive pattern according to which a man's fortunes and career are shown to depend largely on chance, and everything usually ends up with a happy marriage, the purchase of a home, and a sweet idyllic family life.

Objectively the purpose of such pictures is to offer the audience solace, to comfort and console it. Theirs is the sugar-coated realism to which our art is ideologically opposed. Their underlying esthetic and social conceptions are reflected in the specific methods used by the scenarist and director. The settings are always highly lacquered and unreal. The producers of such films are simply swimming with the same current that has given rise to the dime novel, and to cheap journalism, radio and TV shows. It is the style typical of bourgeois ethics and esthetics.

Unfortunately, some of our films borrow the methods of scenario writing and direction common to bourgeois commercial films, although such methods are absolutely unsuited to us, our way of thinking, our world outlook, our artistic approach, our cinematographic traditions. In particular, the subjects of some of our pictures echo the above-mentioned philosophy of the "lucky chance" in the light of which fortuitous circumstances can suddenly elevate the individual.

A typical example of this unfortunate trend is *Girl Friends*. This picture raises a number of ethical and moral problems which are important to the education of the younger generation. But the influence of the standardized pictures we see and perhaps accept too uncritically has by a sort of inertia of its own been carried over to this film, distorting its original idea.

Take the character of the girl, Sveta, who goes to work in a watch factory, and is driven to despair by the prospect of hav-

ing to perform one and the same operation over and over again on the conveyor. She has no intention of remaining in the factory. Then the pattern of which we have been speaking is introduced, out of all connection with the intrinsic idea of the film, and Sveta, of course, meets a young man who is a worker, of course, in the same shop—on the same conveyor belt, in fact! Only, of course, he is a foreman, and they, of course, fall in love. After that Sveta's character changes for the better overnight.

Forgetting everything important in the story that might have stimulated the spectator's interest, the picture swiftly resolves itself into a happy ending. But it is too happy to be convincing and loses sight of all the difficulties and problems the script-writer posed in the beginning. In keeping with the prefabricated subject and entire tone of the film, the sets are gaudy and the faces of the people vapid.

Any number of such cases could be cited. *My Daughter*, an Odessa Film Studio production, follows exactly the same crass pattern. It creeps into the musical reviews like *The Sailor from the "Comet"* and *Our Young Days*.

The "lucky chance" theory sometimes affects the lives of the characters in strange ways, but fundamentally it always performs the same function and injects a false note into even the best of pictures. Take the film *Not Their Own Children*, which has some vital and interesting features. The story it tells was taken directly from life. The scenario was inspired by an article which appeared in the youth paper, *Komsomolskaia Pravda*. But as the film closes, you see how much harm the method of borrowing esthetic conceptions that are alien to our art can do. In this case "chance" takes the form of the *femme fatale* who walks in at the very end of the film, a lifeless replica of the stereotyped "vamp." She appears before the hero, turns her wiles on him, and absconds with him, wrecking the happiness of many people. Here the "law" of lucky chance is applied in an entirely different way, confronting the spectator with a stupid, pessimistic denouement.

Along with the pictures built around extremely limited themes and subject matter, there are many scenarios and films whose authors try to embrace infinity, to throw in everything including the kitchen sink, to please everybody, including all the consultants from all the bureaus whom the studios may invite to pass judgment.

Where do the theoretical roots of this unpardonable vulgarization of our films spring from? One can hardly find them in our theoretical articles on the cinema. And yet, one can find statements in our general esthetic literature which rationalize the schematic approach just described. In the USSR Academy of Sciences publication *Problems of Esthetics*, there is an article on the problem of the conflict in art. Its author, I. Maseev, has obviously mastered the idea that it is not the artist's task to photograph life.

Yet his definition of the essence of the conflict shows that he cannot break away from the over-simplified approach to form and content. He writes that "the vivid, individualized reproduction of life's contradictions and conflicts in a work of art requires . . ." and then follow several paragraphs numbered a, b, c, etc., in which he lists the demands a work of art must meet. Permit me to quote from two of the paragraphs.

"a) . . . truthful reflection of not just one, but of many sides of human life, and the portrayal of the specific aspects of the contradictions and conflicts of every domain of human activity. . . ."

Then, under d) comes the demand that the work of art combine correct proportions of "criticism of shortcomings, exposure and condemnation of the negative phenomena which retard our advance, and the portrayal and glorification of the positive and bright sides of socialist life, which form its basis. . . ."

The paradoxical thing is that these statements are true in so far as they apply to the artistic process as a whole. Speaking broadly of the tasks of art, it is certainly important to stress the portrayal of as many aspects of life as possible and the combination of criticism of shortcomings with praise of the positive sides of life. But when that general postulate is turned into a law for every work of art it loses meaning. Moreover, the author knows only "criticism" and "praise" and leaves no room for involved and contradictory characters like Grigorii Melekhov in *And Quiet Flows the Don* or for humor and lyricism, or for the great variety of other qualities that make up character.

But as it happens, Maseev's formulas are more insistent than one might suppose. They are applied with little variation in many scenarios and films, the latter appearing merely as illustrations of the formulas.

In addition to criticizing the bourgeois conceptions mentioned earlier and also dogmatism with more theoretical cogency and conviction, we must also, in my opinion, focus the attention of our cinematographers on the importance of working out the concrete problems of the art of socialist realism and of finding new and original subjects and plots illustrative of the distinct aspect and beauty of our life in its true and inimitable detail, integrally and completely. It goes without saying that the artist has a right to use traditional plots, treating them in a new way. Such adaptations and revivals of old plots are proper and it would be foolish to deny it. But the main emphasis must lie on the search for original characters and situations. This is borne out by quite a few scenarios and films.

Dovzhenko's scenario *Poem of the Sea* is built around an unusual situation: the destruction of an old village and the appearance of a new sea in its place. The event brings people home from different parts of the country. The use of the device met with violent objections from certain film makers and writers. But with its help the author of *Poem of the Sea* succeeded in bringing home to us his ideas on the spiritual make-up of his characters.

The more we direct our attention to the search for new situations characteristic of our society, the easier it will be for us to get rid of the stereotyped and hackneyed elements which have no place in our esthetics of the cinema, and the sooner we can cure the worst fault of our films—monotony and triteness.

* * *

We must develop the theory and esthetics of the cinema in two directions. One of these is strategic, and calls for substantial and comprehensive theoretical works. That is important and feasible. The other is easier and does not call for large staffs or much time. It would take the form of a series of monographs on individual problems of film craftsmanship and esthetics.

It has perhaps never been so important before for our film makers and theoreticians to coordinate their efforts and to establish contacts with foreign scholars. Professor Rodenberg of the German Democratic Republic has suggested the convocation of an international seminar on the theory of the cinema. This is a good idea and should be put into effect.

Other forms of joint theoretical work are also possible. We could publish a collaborative book on the present state and the

future of the cinema. It would contain articles and suggest hypotheses similar to the article "Staking a Claim" by Eisenstein, Pudovkin and Alexandrov on the talkies. It might also contain excerpts from larger studies and essays on important events in the film world, discuss technical or artistic advances, present small studies on individual theoretical problems. There must be variety in our theoretical work, too, you see.

Although a number of books of some theoretical interest have appeared in recent years, it remains true that problems of the cinema are receiving too little theoretical consideration. Neither the State Institute of Cinematography nor the Academy of Sciences is doing enough work on recent experience in the cinema arts. There is not a single book for the general reader, to say nothing of textbooks on cinema techniques for the popular or amateur motion picture movement.

While continuing to work on the history of the Soviet and world cinema, it seems to me we must also make a radical about-face and come to grips with the creative problems and esthetics of the contemporary cinema. Works on the history of the cinema must also make the latter their point of departure.

Our theoretical work must show the same intolerance of stereotype, the same degree of emotional involvement and communist zeal that distinguish the work of our cinematographers, those who have given us pictures of more than passing interest.

Some Aspects of Future Plant Design

By L. S. Fegel'man

The State Committee for Automation and Machine-Building commissioned a group of plant designers and architects to prepare blueprints and present their ideas on a machine-building plant to be built 15 to 20 years in the future. The author of this article headed the project. ["The Factory of the Future," *Ekonomicheskaiia Gazeta*, July 1, 1960—abridged.]

Everything about the assignment was unusual. The foundation of the factory would only be laid 15 years from now. That meant we had to foresee the advances that technology and organization of industry were bound to make, and work out the new and most efficient layout and architecture, and keep costs down while we were at it.

This was a test not only of our technical, but also our political and economic maturity. What we had been asked to design was the factory of the communist future. First of all, we could not permit any mistakes as to the choice of our product. It had to be something that would not prove out-of-date technically or psychologically by then, and yet something that permitted comparisons with the output of our present plants.

We had to define the scope of production, draw up a program, and decide on the capacity ceiling of our future plant.

And where should we put it? At first thought the answer to that question seemed simple enough in a country as vast as ours. But our economic geography is changing all the time. Factories and cities are springing up where only yesterday the steppes were covered with wild grass and the taiga stood dense and untouched. How many other changes were bound to take place in the next 20 years!

This and many other difficult problems confronted the designers. What technical methods would prevail in serial pro-

duction two decades from now? What kind of materials would factory buildings be made of? What would transportation facilities look like then? And last but not least, was the question of the people who would man our plant — they had to be provided with the best conceivable working conditions.

After years of working and thinking and searching, every designer is bound to have some technical ideas of his own which he would very much like to see put into practice. Not every one of us is lucky enough to see that happen, though. That's why this seemed such a wonderful opportunity!

The Crucial Question

And so the first thing we had to do was select a product. The assignment told us our plant would make metal-working machine tools. Yes — but exactly what kind? The modern trend is obviously for the form and size of the semi-finished product to be as close as possible to the finished product. And so the demand for machine-tools that perform the crudest operations was bound to diminish, while that for machine-tools to do the finer finishing processes was bound to grow.

One of the most widespread operations is grinding holes. We settled on internal-grinding machine-tools. For purposes of comparison, we took the design of the main production wing of the Voronezh internal-grinding machine-tool plant as a control, and calculated how much more it could produce in the same premises if the advanced technical methods of the future were used.

Imagine a pair of scales. On one side is the program, and on the other — the technological methods. When the scale is balanced, that is, the output program and technology are in conformity with each other, the task is solved. The greater the output program, the more up-to-date and advanced the technology and equipment must be. If highly productive technology is used for a small program, the balance will be upset.

From our calculations it appeared that we could keep things balanced if we set our annual program at 10,000 internal-grinding machine-tools by serial production, and 400 machine-tools by individual production.

As soon as this was decided we heaved a sigh of relief; now we could proceed to the concrete planning of the factory.

The modern metal-working machine-tool is a complicated item. Ordinarily it consists of hundreds of cast iron and steel parts made of forged and cast pieces, rolled steel, plastics, rubber, leather and even glass. It is driven by one or several electric motors. It has pumps for oiling and cooling, clutches, ball-bearings, and complicated hydraulic devices.

Twenty-five or thirty years ago such machine-tools were much simpler, and most of the parts and mechanisms could be made in one plant. As their design became more complicated and standardization and normalization developed, special factories were established to supply the machine-building plants with certain sets of parts. And yet until recently such machine-building plants were mostly integrated establishments with their own primary and auxiliary shops.

In the future, as machine-building develops and there is more specialization and coordination, we shall see more and more centralized foundries and forges set up in the industrial districts to supply the nearby machine-building plants with castings and forgings.

In addition, specialized establishments will produce a good many of the normalized parts needed. It is estimated that in the next 15 to 20 years about 80% of the parts of metal-cutting machine-tools will be normalized.

This gave us grounds for assuming that our machine-building plant would receive prefabricated and completed parts and components in amounts averaging 70% of the total cost of each machine-tool. That is five and a half times more than the Saratov plant gets today, for instance.

It goes without saying that prefabricated and completed parts would have to be delivered exactly on time, according to schedule. Therefore, our plant would not need more than a 7- or 10-day reserve.

At this point a serious problem confronted us. The trouble is that large fashioned castings become deformed in time under the influence of their internal tensions. It takes weeks and even months for metal to be "damped." This meant we would have to have several thousand tons of iron castings on hand at the plant all the time, which is out of the question, of course, as it would entail a waste of considerable materials.

After careful thought we decided to use the well-known methods of artificial aging of the metal: heat and mechanical action on the castings.

We also provided for still another form of coordination. In this case, our plant was to act not as the recipient of goods, but as the supplier. I am speaking of the creation of a large designing bureau in the factory to draw up the designs of new machine-tools not only for our own purposes, but also for other machine-building plants.

The advantage of having such a bureau is obvious. It would enable us to concentrate our designing personnel in one place, and use them to better effect in standardizing and unifying the construction of the machine-tools.

And so our factory was to reflect two related processes in the development of modern technology: one, the growth in the size of the factory specializing in the production of a small list of products, and two, the ramification of its production ties with other factories supplying it with parts and materials.

Machines and Men

Let me give a slightly more detailed picture of the equipment and means of mechanization and automation used in the new plant.

All the parts of the machine frames are made on automatic lines, including rotary lines. Mechanisms work with the greatest precision, without the human agent, directing the item from machine to machine, turning it as required for the corresponding operation, fastening and unfastening the items, measuring, defining their quality, removing them from the machines, cleaning, washing and lubricating them. Each line processes one item: the frame, body, the spindle box, or bedplate. And only one line processes a group of technological homogeneous flat items (carriages, wedges, caps, etc.).

All the lines are attuned to the rhythm of the assembly line, and they are controlled from a single point. As mentioned above, ordinary multi-purpose machine-tools will be used in the shop along with automatic lines. Why?

This question is answered by economics. It should not be forgotten that each automatic line costs hundreds of thousands and even millions of rubles. This expense should be recouped in

3 to 4 years. This is possible only if the lines are operated at full capacity, which is not always the case. Moreover, in the new conditions one worker can serve several ordinary automatic, semi-automatic or program-control machines.

Our plans call for the mechanization of all transportation and other auxiliary jobs in our plant, so as to reduce the worker's effort to 10 kg. at a time. There will be an electric hoist for every machine designed for handling heavy items. Semi-finished items will be directed from machine to machine in different ways, depending upon the distance, weight and size of the item, by means of overhead conveyors, cantilever cranes, reed places, or electric cars.

Small items are placed in special cases which are put into shelves and sent to storage. There they are sent for assembly in accordance with a prearranged schedule, all this being done automatically. It is enough to push one or another button, and the overhead conveyor will take the item or the case with items to any point of the assembly section.

All the information about the production and technical work of the integrated organism of the plant flows in an uninterrupted stream to the central dispatcher's service which, in addition to ordinary means of communication, is equipped with light signaling, a TV station, instruments for mechanical sound recording, photographing and various automatic recorders. The dispatcher's service can receive almost instantaneously information about the state of affairs at each production sector.

It is in place to mention at this point the computing machines which we expect to use in our plant for mathematical calculations of machine designs, for planning and production accounting, and also for daily distribution and recording of the work of the equipment. This should enable us to get along with a much smaller number of engineers and computers, planning specialists, economists, and so on.

A large well-lit four-story building surrounded by a luxuriant park houses the basic engineering services of the plant: the design and technological offices, the department for organization and automation of production, and the laboratories. The most favorable conditions of work will be created in these buildings which will stand amid greenery, away from the heavy traffic lanes. The designers and research workers have at their disposal

first-class equipment and instruments for studying the properties of different materials, the work of the machines and other equipment, and for performing the necessary mathematical calculations by means of computing machines.

Perfect quiet prevails in the spacious shops, offices and halls. It is sustained by sound-absorbing panels, floors and curtains. Soothing wall colorings, comfortable furniture and air conditioning will undoubtedly be conducive to good work.

Labor Is a Joy

The plant of the future will have the most favorable conditions for fruitful work.

The buildings are surrounded by a green fence of trees, bushes and flower beds. The workshop is as bright and airy as the engineering offices. The walls and ceilings are painted in soothing colors. The air is regulated, an even temperature and humidity are sustained, irrespective of the season and weather. This is achieved with the aid of powerful air conditioning units mounted on the roof. These automatically controlled units regulate the circulation of the air, purify it, heat or cool it, moisten it, enrich it with oxygen and lend it a pleasant odor: grass extracts, pine, or eucalyptus.

The lighting in all the sectors of production is also regulated automatically, in line with the changes in the intensity of daylight.

Special provisions have been made for combating noise which is harmful to human health. To this end, "noisy" equipment is mounted on noise-absorbing foundations. Dynamic units are fitted with special sound mufflers.

The worker's role in the plant is reduced to regulation of the production process, to the control of machines and systems of machines. It would, however, be wrong to think that in a plant with perfect machines and equipment the worker does nothing else than push buttons.

On the contrary, the operation of "thinking" machines, the latest modern equipment and automatic regulators, requires highly skilled, cultured people with a thorough knowledge of technology. And the personnel of our plant is made up precisely of workers of a new type, worker-intellectuals, citizens of the future.

For their convenience, the plant will have special recreation rooms, a library, cinema, open-air grounds for athletic games, fine wardrobes and showers. The plant is designed for work in two six-hour shifts, with two days off a week. The second shift finishes not later than 9 P.M. This is very important. To say nothing of the fact that this arrangement obviates the need for a night shift, it still gives the worker employed on the second shift some time to spend with his family.

Two breaks in the shift will give the worker time for exercise and for lunch or dinner. Ordered meals are delivered to the different sectors by the plant's cafeteria. And right in the cafeteria which is equipped with slot-machines the workers have a rich choice of food.

At the end of the shift the Chief Mechanics Department takes over the plant for cleaning, checking and tuning up the equipment, communications and control devices in order to prepare it for the next shift. The sanitation service goes to work next; it has a supply of special equipment, washing and cleaning machines, devices for cleaning the floor, walls, windows and ceilings. Strictly speaking, these are combined including among other things powerful dust absorbers.

The General Plan

Like many other enterprises, machine-tool plants were formerly built as a rule far away from the residential districts, somewhere on the city's outskirts, and even more often beyond city limits. This was quite natural, for almost every engineering plant has shops which constantly give off smoke, soot and dust, such as the foundry, heat-treating shop and forgeshop.

The future plant will not have any shops of this kind and it may therefore be built right in the center of the residential district. This offers great advantages, because it reduces the length of the water mains, drainage pipes, heat conducting units, as well as the construction and maintenance expenditures.

Our future plant has only two buildings: the production and engineering buildings, connected by a glazed passageway.

Among the numerous versions prepared, the most suitable had buildings with ceilings held up by stays, with 60-meter wide and even wider aisles, and buildings without skylight, with flat roofs and inside water drains. We have chosen the latter

project as the cheapest one. The buildings will have simple and severe lines. We have two versions for the roof: a semi-transparent roof of plastic glass, and an opaque roof. The walls are built of metal and glass.

The technologists insisted:

"The distance between the mainstays should be no less than 24 meters in either direction, and the height—8 meters at least. We are abandoning traveling cranes and we shall use electric cars instead for transporting loads. There will therefore be no partitions in the buildings."

This last feature seems simple enough, and yet it has greatly complicated the work of the designers, for the shops will have thermal and heating furnaces, galvanic baths, welding equipment, painting chambers, and other units which give off heat, gases, dust, etc. In the past, all this was coped with by mounting equipment in separate premises, and by using local ventilation. In this case, it was necessary to ensure that harmful production waste should not penetrate the shops, and that constant temperature should be sustained in the vast building throughout the year.

In summer the roof is inundated and is turned into a big swimming pool within an attractive belt of concrete. The water on the roof keeps away about 90% of the heat of solar radiation and it is therefore possible to sustain a constant temperature in the building.

* * *

And so, the plant of the future exists in general outline. Not in a science-fiction story or in the utopian's imagination, but in engineering calculations, in thoroughly verified economic estimates. It is quite possible that modifications, changes and improvements will be introduced in this project. At any rate, the dream has already received its initial embodiment in practice.

The designers have tried to carry into the future the best achievements which are already in existence. Some 15 to 20 years will pass, and then. . . . But must we really wait so long? Perhaps it is possible to carry something from the future into the present. Let us think it over.

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